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Sol CLAIMS:

1. A nucleic acid molecule comprising a nucleic acid sequence which encodes a polypeptide selected from any of:

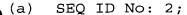
- (a) SEQ ID No: 2;
- 5 (b) an immunogenic fragment comprising at least 12 consecutive amino acids from a polypeptide of (a); and
  - (c) a polypeptide of (a) or (b) which has been modified to improve its immunogenicity, wherein said modified polypeptide is at least 75% identical in amino acid sequence to the corresponding polypeptide of (a) or (b).
  - 2. A nucleic acid molecule comprising a nucleic acid sequence selected from any of:
    - (a) SEQ ID Nos: 1;
- (b) a sequence which encodes a polypeptide encoded 15 by SEQ ID No: 1;
  - (c) a sequence comprising at least 38 consecutive nucleotides from any one of the nucleic acid sequences of (a) and (b); and
- (d) a sequence which encodes a polypeptide which is 20 at least 75% identical in amino acid sequence to the polypeptides encoded by SEQ ID No: 1.
  - 3. A nucleic acid molecule comprising a nucleic acid sequence which is anti-sense to the nucleic acid molecule of claim 1.
- 25 4. A nucleic acid molecule comprising a nucleic acid sequence which encodes a fusion protein, said fusion protein comprising a polypeptide encoded by a nucleic acid molecule according to claim 1 and an additional polypeptide.
- 5. The nucleic acid molecule of claim 4 wherein the additional polypeptide is a heterologous signal peptide.

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- 6. The nucleic acid molecule of claim 4 wherein the additional polypeptide has adjuvant activity.
- 7. The nucleic acid molecule according to claim 1, operatively linked to one or more expression control sequences.
- 8. A vaccine comprising at least one first nucleic acid according to claim 1, and a vaccine vector wherein each first nucleic acid is expressed as a polypeptide, the vaccine optionally comprising a second nucleic acid encoding an additional polypeptide which enhances the immune response to the polypeptide expressed by said first nucleic acid.
- 9. The vaccine of claim 8 wherein the second nucleic acid encodes an additional Chlamydia polypeptide.
- 10. A pharmaceutical composition comprising a nucleic acid according to claim 1 and a pharmaceutically acceptable carrier.
- 11. A pharmaceutical composition comprising a vaccine according to claim 8 and a pharmaceutically acceptable carrier.
- 12. A unicellular host transformed with the nucleic acid molecule of claim 7.
- 20 13. A nucleic acid probe of 5 to 100 nucleotides which hybridizes under stringent conditions to the nucleic acid molecule of SEQ ID No: 1, or to a homolog or complementary or anti-sense sequence of said nucleic acid molecule.
- 14. A primer of 10 to 40 nucleotides which hybridizes
  25 under stringent conditions to the nucleic acid molecules of SEQ
  ID No: 1, or to a homolog or complementary or anti-sense
  sequence of said nucleic acid molecule.
  - 15. A polypeptid comprising an amino acid sequence selected from any of:



- (b) an immunogenic fragment comprising at least 12 consecutive amino acids from a polypeptide of (a); and
- (c) a polypeptide of (a) or (b) which has been modified to improve its immunogenicity, wherein said modified polypeptide is at least 75% identical in amino acid sequence to the corresponding polypeptide of (a) or (b).
  - 16. A fusion polypeptide comprising the polypeptide of claim 15 and an additional polypeptide.
- 10 17. The fusion polypeptide of claim 16 wherein the additional polypeptide is a heterologous signal peptide.
  - 18. The fusion protein of claim 16 wherein the additional polypeptide has adjuvant activity.
- 19. A method for producing a polypeptide of claim 15,
  15 comprising the step of culturing a unicellular host according to claim 12.
  - 20. An antibody against the polypeptide of claim 15.
  - 21. A vaccine comprising at least one first polypeptide according to claim 15 and a pharmaceutically acceptable carrier, optionally comprising a second polypeptide which enhances the immune response to the first polypeptide.
    - 22. The vaccine of claim 21 wherein the second polypeptide comprises an additional Chlamydia polypeptide.
- 23. A pharmaceutical composition comprising a polypeptide according to claim 15 and a pharmaceutically acceptable carrier.
  - 24. A pharmaceutical composition comprising a vaccine according to claim 21 and a pharmaceutically acceptable carrier.

- 25. A pharmaceutical composition comprising an antibody according to claim 20 and a pharmaceutically acceptable carrier.
- 26. A method for preventing or treating Chlamydia infection using the nucleic acid of claim 1.
  - 27. A method for preventing or treating Chlamydia infection using the vaccine of claim 8.
  - 28. A method for preventing or treating Chlamydia infection using the pharmaceutical composition of claim 10.
- 10 29. A method for preventing or treating Chlamydia infection using the polypeptide of claim 15.
  - 30. A method for preventing or treating Chlamydia infection using the antibody of claim 20.
- 31. A method of detecting Chlamydia infection comprising
  15 the step of assaying a body fluid of a mammal to be tested with
  the nucleic acid of claim 2
  - A method of detecting Chlamydia infection comprising the step of assaying a body fluid of a mammal to be tested with the polypeptide of claim 15.
- 20 33. A method of detecting Chlamydia infection comprising the step of assaying a body fluid of a mammal to be tested with the antibody of claim 20.
- 34. A method for identifying the polypeptide of claim 15 which induces an immune response effective to prevent or lessen the severity of Chlamydia infection in a mammal previously immunized with polypeptide, comprising the steps of:
  - (a) immunizing a mouse with the polypeptide; and
  - (b) inoculating the immunized mouse with Chlamydia;

wherein the polypeptide which prevents or lessens the severity of Chlamydia infection in the immunized mouse compared to a non-immunized control mouse is identified.

- 35. Expression plasmid pCAmg002.
- 5 36. A nucleic acid molecule of SEQ ID NO. 3 or 4.
  - 37. An outer membrane protein from Chlamydia.

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